WHAT IS CLAIMED IS:

1. A display apparatus for providing a two-dimensional image on a curved display surface comprising:

(a) a line object generation apparatus for generating a modulated light beam, comprising:

(a1) a laser light source for providing an illumination beam;

(a2) a linear spatial light modulator for modulating the illumination beam to form the modulated light beam;

(b) a projection lens for directing the modulated light beam toward a line image scanner for forming a line image on the curved display surface and for scanning the modulated light beam to form the two-dimensional image on the curved display surface, wherein the line image scanner is optically disposed near center of curvature of the curved display surface.

2. A display apparatus according to claim 1 wherein the line object generation apparatus is disposed above the eye level of an observer.

3. A display apparatus according to claim 1 wherein the line object generation apparatus is placed below the eye level of an observer.

4. A display apparatus according to claim 1 wherein the curved display surface is a rear projection screen.

5. A display apparatus according to claim 1 wherein the linear spatial light modulator comprises an array of GEMS elements.

6. A display apparatus according to claim 1 wherein the linear spatial light modulator comprises a GLV device.

7. A display apparatus according to claim 1 wherein the linear spatial light modulator comprises a micromirror linear array.

8. A display apparatus according to claim 1 wherein the linear spatial light modulator provides the modulated light beam as at least one diffracted order of the illumination beam

9. A display apparatus according to claim 8 further comprising a spatial filter for providing the at least one diffracted order of the illumination beam.

10. A display apparatus according to claim 9 wherein the spatial filter blocks zeroeth order reflected light from the linear spatial light modulator.

11. A display apparatus according to claim 9 wherein the spatial filter blocks a non-zeroeth order diffracted light from the linear spatial light modulator.

12. A display apparatus according to claim 1 wherein the linear spatial light modulator is optically off-axis with respect to the projection lens.

13. A display apparatus according to claim 1 wherein the laser light source provides the illumination beam at a vertically oblique angle with respect to the linear spatial light modulator.

14. A display apparatus according to claim 1 wherein the laser light source provides the illumination beam at a compound oblique angle with respect to the linear spatial light modulator.

15. A display apparatus according to claim 1 wherein the line image scanner comprises a folding mirror.

16. A display apparatus according to claim 15 wherein the folding mirror is curved.

17. A display apparatus according to claim 1 wherein the line image scanner comprises a galvanometer.

18. A display apparatus according to claim 1 wherein the line image scanner comprises a rotating polygon.

19. A display apparatus according to claim 1 wherein the line image scanner comprises a rotating bigon.

20. A display apparatus according to claim 1 wherein the line image scanner employs reciprocating motion.

21. A display apparatus according to claim 1 wherein the line image scanner is optically disposed within about 30% of the radius distance from the center of curvature to the curved display surface.

22. A display apparatus according to claim 1 wherein the center of curvature of the display surface is determined using a best fit circular approximation.

23. A display apparatus according to claim 1 wherein the curved display surface is cylindrical.

24. A display apparatus according to claim 1 wherein the curved display surface is spherical.

25. A display system for providing a substantially collimated virtual image to a viewer, comprising:

(a) a curved mirror;

(b) a curved display surface disposed near a focal surface of the curved mirror and having a center of curvature near the center of curvature of the curved mirror for providing an intermediate image for collimation by the curved mirror;

(c) an image generation system for forming the intermediate image on the curved display surface, the image generation system comprising:

(c1) a line object generation apparatus for generating a modulated light beam, comprising:

(i) a laser light source for providing an illumination beam;

(ii) a linear spatial light modulator for modulating the illumination beam to form the modulated light beam;

(c2) a projection lens for directing the modulated light beam toward a line image scanner for forming a line image on the curved display surface and for scanning the modulated light beam to form the intermediate image as a two-dimensional image, wherein the line image scanner is optically disposed near center of curvature of the curved display surface.

26. A display apparatus according to claim 25 wherein the linear spatial light modulator comprises an array of GEMS elements.

27. A display apparatus according to claim 25 wherein the linear spatial light modulator comprises a GLV device.

28. A display apparatus according to claim 25 wherein the linear spatial light modulator comprises a micromirror linear array.

29. A display apparatus according to claim 25 wherein the linear spatial light modulator provides the modulated line image as at least one diffracted order of the illumination beam.

30. A display apparatus according to claim 29 further comprising a spatial filter for providing the at least one diffracted order of the illumination beam.

31. A display apparatus according to claim 30 wherein the spatial filter blocks zeroeth order reflected light from the linear spatial light modulator.

32. A display apparatus according to claim 30 wherein the spatial filter blocks non-zero order diffracted light from the linear spatial light modulator.

33. A display apparatus according to claim 25 wherein the linear spatial light modulator is optically off-axis with respect to the projection lens.

34. A display apparatus according to claim 25 wherein the laser light source provides the illumination beam at a vertically oblique angle with respect to the linear spatial light modulator.

35. A display apparatus according to claim 25 wherein the laser light source provides the illumination beam at a compound oblique angle with respect to the linear spatial light modulator.

36. A display apparatus according to claim 25 wherein the line image scanner comprises a folding mirror.

37. A display apparatus according to claim 36 wherein the folding mirror is curved.

38. A display apparatus according to claim 25 wherein the line image scanner comprises a galvanometer.

39. A display apparatus according to claim 25 wherein the line image scanner comprises a rotating polygon.

40. A display apparatus according to claim 25 wherein the line image scanner comprises a rotating bigon.

41. A display apparatus according to claim 25 wherein the line image scanner employs reciprocating motion.

42. A display apparatus according to claim 25 wherein the line image scanner is optically disposed within about 30% of the radius distance from the center of curvature to the curved display surface.

43. A display apparatus for providing a two-dimensional image on a display surface comprising:

(a) a line object generation apparatus for generating a modulated light beam, comprising a laser light source for providing an illumination beam at a compound oblique angle to a linear spatial light modulator for modulating the illumination beam to form the modulated light beam; and

(b) a projection lens for directing the modulated light beam toward a line image scanner for forming a line image on the display surface and for scanning the modulated light beam to form the two-dimensional image on the display surface.

44. A display apparatus for providing a two-dimensional image on a display surface comprising:

(a) a line object generation apparatus for generating a modulated light beam, comprising a laser light source for providing an illumination beam at a vertical

oblique angle to a linear spatial light modulator for modulating the illumination beam to form the modulated light beam;

(b) a projection lens for directing the modulated light beam toward a line image scanner for forming a line image on the display surface and for scanning the modulated light beam to form the two-dimensional image on the display surface.

45. A display apparatus according to claim 43 wherein the linear spatial light modulator is optically off-axis relative to the projection lens.

46. A display apparatus according to claim 44 wherein the linear spatial light modulator is optically off-axis relative to the projection lens.

47. A display apparatus according to claim 43 wherein the linear spatial light modulator comprises an array of GEMS elements.

48. A display apparatus according to claim 43 wherein the linear spatial light modulator comprises a GLV device.

49. A display apparatus according to claim 43 wherein the linear spatial light modulator comprises a micromirror linear array.

50. A display apparatus according to claim 43 wherein the linear spatial light modulator provides the modulated light beam as at least one diffracted order of the illumination beam

51. A display apparatus according to claim 50 further comprising a spatial filter for providing the at least one diffracted order of the illumination beam.

52. A display apparatus according to claim 51 wherein the spatial filter blocks zeroeth order reflected light from the linear spatial light modulator.

53. A display apparatus according to claim 51 wherein the spatial filter blocks a non-zeroeth order diffracted light from the linear spatial light modulator.

54. A display apparatus according to claim 43 wherein the line image scanner comprises a folding mirror.

55. A display apparatus according to claim 44 wherein the linear spatial light modulator comprises an array of GEMS elements.

56. A display apparatus according to claim 44 wherein the linear spatial light modulator comprises a GLV device.

57. A display apparatus according to claim 44 wherein the linear spatial light modulator comprises a micromirror linear array.

58. A display apparatus according to claim 44 wherein the linear spatial light modulator provides the modulated light beam as at least one diffracted order of the illumination beam.

59. A display apparatus according to claim 58 further comprising a spatial filter for selecting the at least one diffracted order of the illumination beam.

60. A display apparatus according to claim 59 wherein the spatial filter blocks zeroeth order reflected light from the linear spatial light modulator.

61. A display apparatus according to claim 59 wherein the spatial filter blocks a non-zeroeth order diffracted light from the linear spatial light modulator.

62. A display apparatus according to claim 44 wherein the wherein the line image scanner comprises a folding mirror.

63. A method for providing an image on a curved display surface comprising:

(a) generating a modulated light beam by directing a laser illumination beam to a linear spatial light modulator and modulating the spatial light modulator to form a line object thereon;

(b) providing a line image scanner optically disposed near the center of curvature of the curved display surface; and,

(c) projecting the modulated light beam toward the line image scanner to form a line image on the curved display surface and scanning the modulated light beam to form a two-dimensional image on the curved display surface.

64. A method for providing an image on a curved display surface according to claim 63 wherein the laser illumination beam is directed toward the linear spatial light modulator at a vertically oblique angle.

65. A method for providing an image on a curved display surface according to claim 63 wherein the laser illumination beam is directed toward the linear spatial light modulator at a compound oblique angle.

66. A method for providing an image on a curved display surface according to claim 63 wherein the step of projecting the modulated light beam toward the line image scanner comprises the step of directing the modulated light beam toward a galvanometer mirror.

67. A method for providing an image on a curved display surface according to claim 63 wherein the step of projecting the modulated light beam toward

the line image scanner comprises the step of directing the modulated light beam toward a rotating polygon.

68. A method for providing an image on a curved display surface according to claim 63 wherein the step of projecting the modulated light beam toward the line image scanner comprises the step of directing the modulated light beam toward a rotating bigon.

69. A method for providing an image on a curved display surface according to claim 63 wherein the step of directing the laser illumination beam to the linear spatial light modulator comprises the step of directing the laser illumination beam to an array of GEMS elements.

70. A method for providing an image on a curved display surface according to claim 63 wherein the step of directing the laser illumination beam to the linear spatial light modulator comprises the step of directing the laser illumination beam to a GLV device.

71. A method for providing an image on a curved display surface according to claim 63 wherein the step of generating a modulated light beam comprises the step of blocking at least one diffracted order of light modulated at the spatial light modulator.

72. A method for providing an image on a curved display surface according to claim 71 wherein the step of blocking the at least one diffracted order of light modulated at the spatial light modulator comprises the step of blocking a zeroeth order light.

73. A method for providing an image on a curved display surface according to claim 63 wherein the line image scanner is a rotating scanner.

74. A method for providing an image on a curved display surface according to claim 63 wherein the line image scanner is a reciprocating scanner.

75. A method for providing an image on a curved display surface according to claim 63 wherein the step of providing a line image scanner optically disposed near the center of curvature of the curved display comprises the step of providing a line image scanner optically disposed within about 30% of the radius from the center of curvature to the curved display surface.

76. A method for providing an image on a curved display surface comprising:

(a) generating a modulated line object by modulating a laser illumination beam, the modulated line object is off-axis from a projection lens;

(b) imaging the modulated line object through the projection lens toward a line image scanner, wherein the line image scanner is optically disposed near the center of curvature of the curved display surface.

77. A method for providing an image on a curved display surface according to claim 76 wherein the line image scanner is off-axis from the projection lens.

78. A method for providing an image on a curved display surface according to claim 76 wherein the step of modulating a laser illumination beam comprises the step of modulating an array of GEMS elements.

79. A method for providing an image on a curved display surface according to claim 76 wherein the step of modulating a laser illumination beam comprises the step of modulating a GLV device.

80. A method for providing an image on a curved display surface according to claim 76 wherein the step of modulating a laser illumination beam comprises the step of modulating a micromirror linear array.

81. A method for providing an image on a curved display surface according to claim 76 wherein the step of imaging the modulated line object comprises the step of blocking at least one diffracted order of light from the laser illumination beam.

82. A method for providing an image on a curved display surface according to claim 76 wherein the step of modulating a laser illumination beam comprises the step of modulating a vertically oblique laser illumination beam.

83. A method for providing an image on a curved display surface according to claim 76 wherein the step of modulating a laser illumination beam comprises the step of modulating a compound oblique laser illumination beam.

84. A method for providing an image on a curved display surface according to claim 76 wherein the line image scanner is a rotating scanner.

85. A method for providing an image on a curved display surface according to claim 76 wherein the line image scanner is a reciprocating scanner.

86. A method for providing an image on a curved display surface according to claim 76 wherein the line image scanner is optically disposed within about 30% of the radius from the center of curvature to the curved display surface.

87. A method for displaying a two-dimensional image on a display surface comprising:

(a) providing an illumination beam at a compound oblique angle to a linear spatial light modulator for modulating the illumination beam to form a modulated light beam;

(b) projecting the modulated light beam toward a line image scanner for forming a line image on the display surface and scanning the modulated light beam to form the two-dimensional image on the display surface.

88. A method for displaying a two-dimensional image on a display surface comprising:

(a) providing an illumination beam at a vertical oblique angle to a linear spatial light modulator for modulating the illumination beam to form a modulated light beam;

(b) projecting the modulated light beam toward a line image scanner for forming a line image on the display surface and scanning the modulated light beam to form the two-dimensional image on the display surface.